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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

June 29, 2007

TO: Internal File

THRU: Wayne Western, Team Lead WHW

FROM: Priscilla Burton, CPSSc PWB by ar

RE: Wild Horse Ridge Tank Seam As-Built, Co-op Mining Co., Bear Canyon Mine, C/015/0025, Task ID #2811

SUMMARY:

Additional information was received on May 21, 2007. The as-built information was initially reviewed as Task 2753. The as-built information updates roof and floor analysis in Section 6C, cut and fill information in Appendix 5-K and page 2-19 of the MRP, as well as Maps 2-1B (Soils Map), 2-2C (stockpile configuration), 2-3G (Reclamation Area), 5-2G, 5-6G, 5-7G, 7-1B, 7-1F, 7-1G, 7-5a. The Reclamation areas described are TS 16 and TS 17 on Plate 2-3G.

Approval is recommended.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Analysis:

The following hydrology information is available for the Wild Horse Ridge workings.

Plate 5-1C indicates locations of roof and floor sampling. Samples will be analyzed according to Table 2-4a and results will be included in Appendix 6-C (MRP, Section 623.100).

Data obtained from borehole analysis in 1982 of both the Tank Seam and the Blind Canyon Seam roof/floor and partings indicates that waste rock from the Blind Canyon Seam has little if any calcium carbonate content and will be acid-forming.

Sampling locations RFM 1, 2 and 3 are in the #3 Blind Canyon seam U 024316 as indicated on Plate 5-1A. Samples RFM-1 of the Blind Canyon coal, ceiling and floor were taken in September 2002. The analyses confirm that the Blind Canyon coal is acidic (pH 3.7 and a no carbonate content or neutralizing potential). The Blind Canyon coal is also toxic due to the Boron content (10.6 ppm). These characteristics are not present in the ceiling and floor.

Sample site RFM-4 is in the Tank Seam in Mine #1 and was taken in 1995 (Email communication with Mark Reynolds on September 6, 2002). Information from this sample is found in Appendix 6C pages 23-25. Sample sites RFM-5, 6, and 7 are also in the Tank Seam, U-38727 lease area (Plate 5-1C). Samples RFM-5 and 6 were sampled in 2007 according to the parameters in Table 2-4a.

Future sample points are shown on Plates 5-1 A and 5-1C. Sample RFM-7 will be taken in 2020. Samples RFM 2 and 3 of the Blind Canyon seam will be taken in 2016 and 2021, respectively. (A previous sample site in the Hiawatha Seam on Wild Horse Ridge (Plate 5-1B, 2001 Annual Report) was also designated RFM –3, but this site was in an area mined in 1994.)

Findings:

The information provided meets the requirements of the Regulations.

OPERATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Topsoil Removal and Storage

A record of stored subsoil and topsoil is found in Table 2-5. Approximately 16,494 yd^3 of topsoil and 36,452 yd^3 of pad material make a total of 52,946 yd^3 available for final reclamation. Table 2-7 indicates that there area 28.03 "new acres" of disturbance. Some of these areas were contemporaneously reclaimed during construction. I.e. The outslopes of the portal access road (TS 16, Plate 2-3G). Topsoil stockpiles are portrayed on Plates 2-2A, B, C.

The 8,800 yd^3 Wildhorse Ridge topsoil stockpile configuration is shown on Plate 2-2B. According to Plate 2-2B, typical slopes range from approximately 6:1 for east facing, 2:1 for west facing, 3:1 for north facing, and 2:1 for south facing. The stockpile is surrounded by a containment berm as described in Section R645-301-234. Section 645-301-231.400 indicates that the soil below the stockpile could provide an additional 2, 354 yd^3 of topsoil for Wild Horse Ridge during reclamation. The native soil was demarcated by permeable fabric strips (see Section R645-301-231.400, Plate 2-1B, and Plate 5-2F).

The 1,480 yd^3 Bear Canyon Mine Tank Seam access road stockpile is illustrated on Plate 2-2A [also referred to as the Main Topsoil Pile in Table 2-5).

The construction of the Wild Horse Ridge Tank Seam topsoil stockpile is illustrated in Plate 2-2C. Final volume is recorded as 1,760 yd^3.

The Permittee has documented topsoil salvage operations, including salvage history, soil salvage areas, soil salvage volumes, and soil placement in the stockpiles.

Chapter 2, Soil Resources, R645-301-230 through R645-301-232.500 and Appendices 5J, 5K and 5M describe the removal, storage and protection of soils, and selected overburden materials or substitutes during construction and reclamation operations of the Wild Horse Ridge site. Five tables summarize the soil information for the entire disturbed area:

Table 2-8 Substitute Topsoil Summary
Table 2-2, Soil Unit Acreage Within the Disturbed Area,
Table 2-7, Reclamation Area Summary, and
Table 2-9, Final Grading Test Sample Density.
Table 5K-1 and 5K-2, Summary of Cut and Fill Volumes

The Permittee considers the Summary Table 2-8 as being the most accurate table in the plan.[1] All other Tables must reconcile with this one. Table 2-7 divides recontoured areas by operational areas and reclamation areas. Table 2-2 is specific to the Wild Horse Ridge and divides recontour acres by soil type within the 3.6 acre Wild Horse Ridge disturbance.

Findings:

The information provided meets the requirements of the Regulations.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Acid- and Toxic-Forming Materials and Underground Development Waste

Appendix 5D provides information on the characteristics of soil, coal and sediment pond sludge through 1989. Appendix 6C Coal & Rock Characteristics has samples of roof and floor through 1995 and includes samples analyzed in January 2003 of roof, floor , coal and sediment pond clean out. The Blind Canyon Seam RM1 roof samples have a pH of 3.7, no neutralization capacity and a boron content of 10 ppm.

Additional sampling of the Tank Seam roof and floor conducted in 2007 was added to App. 6C.

Section 528.320 states that any acid and toxic forming materials from the Bear Canyon #3 and #4 Mines will be buried at the Hiawatha Slurry Pond 5A.

[1] Personal communication with Charles Reynolds during site visit 3/23/01.

Findings:

The information provided meets the requirements of the Regulations.

RECLAMATION PLAN

TOPSOIL

Analysis:

In Table 2-7, the Permittee itemizes 40.27 acres of disturbed area. In Tables 2-5 and 2-8, the Permittee summarizes the available topsoil and substitute topsoil for the 40.28 acre as approximately 52,000 yd^3 . Table 2-7, itemizes the 7.3 acres of the Wild Horse Ridge (areas TS-12 through TS-15). However, only 3.6 acres will be recontouring during reclamation (Tables 2-2 and 2-7). The difference is due to:

1. The Wild Horse Ridge access road, 3.04 acres of which is pre-existing; and
2. The lower conveyor belt access road, 0.36 acres of which will not require grading during final reclamation; and
3. The upper conveyor belt access road, 0.3 acres of which will not require regrading during final reclamation.

On January 27, 2003, the Division received a permit amendment describing the **transfer of 1,000 cu yds of soil from the Blind Canyon tunnel development (TS 15) to the Tank Seam reclamation site for use as fill.** This transfer of material started a ripple in the cut/fill reclamation plans. There are no changes to the total amount of fill required, only the source of fill. A source of fill for the new Tank Seam portals is the Tipple yard. Testing of the Tipple yard soils prior to transfer to the Wild Horse Ridge Tank seam pad is requested.

Blind Canyon seam sample RFM-1are included in Appendix 6-C. The Blind Canyon seam coal is acidic and also toxic due to its Boron content. The material will be buried against the cut of the tank seam reclamation site.

Findings:

The information provided meets the requirements of the Regulations.

RECOMMENDATIONS:

The information received fulfilled the requirements of the plan as it is currently approved. The Division should request that future roof and floor analysis are analyzed for the parameters in Tables 2-4a **AND** 2-4b so that the selenium, boron and acid/base accounting parameters are determined. To effect this change, the Permittee should be asked to revise the monitoring commitment listed on page 6-22 of the MRP.

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